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**(54) OPTICAL RANGE FINDER**

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(57) Abstract:

PROBLEM TO BE SOLVED: To keep the frequency change speed at a constant value with high accuracy by using a frequency shift feedback laser oscillator as an FM laser light source.

**SOLUTION:** A part of the FM laser beam generated by a frequency shift feedback laser oscillator 10 is fed to a measured object A, and the remaining is reflected 21 and fed to a local mirror 22. The FM laser beam reflected on the object A and the local FM laser beam reflected on the local mirror 22 are fed to a light mixer 30 and mixed, and the beat signal having the frequency difference is generated. The beat signal is detected at 42, 43 and fed to a data processor 41, and the distance to the measured object A is calculated based on the beat frequency. An acousto-optical modulator(AOC) 14 in the oscillator 10 is shifted in one direction by the value equal to the ultrasonic frequency  $f$  propagated in the AOC 14 as the Doppler shift quantity each time the laser beam passes, and the frequency is increased by  $2f$  s for each reciprocation. The frequency change speed is kept at a constant value with high accuracy.

